

Solve each system using substitution.

$$\begin{array}{l} -5x + y = 2 \\ 1) \quad -2x + y = 5 \end{array} \quad \boxed{(1,7)}$$

$$\begin{array}{l} -5x + y = 2 \\ +5x \quad +5x \\ \hline y = 5x + 2 \\ y = 5(1) + 2 \\ y = 7 \\ -2x + (5x + 2) = 5 \\ -2x + 5x + 2 = 5 \\ 3x + 2 = 5 \\ -2 \quad -2 \\ \hline 3x = 3 \\ x = 1 \end{array}$$

$$\begin{array}{l} 4x + y = 9 \\ 2) \quad 2y = -8x + 18 \\ 4x + y = 9 \\ -4x \quad -4x \\ \hline y = -4x + 9 \\ 2(-4x + 9) = -8x + 18 \\ -8x + 18 = -8x + 18 \\ +8x \quad +8x \\ \hline 18 = 18 \\ \text{Consistent} \\ \text{Dependent} \end{array}$$

Algebra 2 5.0

3.2 Elimination Method

Name: _____

Date: _____ Pd: _____

You can ELIMINATE if and only if:

- 1) Variables + Equal signs are lined up.
- 2) Opposites

Example 1:

$$\begin{array}{l} 1) \quad \begin{cases} 3x + y = 8 \\ 2x + y = 7 \end{cases} \rightarrow \begin{array}{l} 3x + y = 8 \\ -2x - y = -7 \\ \hline 5x = 15 \\ x = 3 \end{array} \end{array}$$

$$\begin{array}{l} 2) \quad \begin{cases} x + y = 14 \\ x - y = 4 \end{cases} \rightarrow \begin{array}{l} x + y = 14 \\ -x - y = -4 \\ \hline 2y = 18 \\ y = 9 \end{array} \end{array}$$

$$\begin{array}{l} 3) \quad \begin{cases} 3x + 2y = 7 \\ 5x - 2y = 1 \end{cases} \rightarrow \begin{array}{l} 3x + 2y = 7 \\ 3x + 2y = 7 \\ -5x - 2y = -1 \\ \hline -2x = 6 \\ x = -3 \end{array} \end{array}$$

$$\begin{array}{l} 4) \quad \begin{cases} 3x + 2y = 7 \\ 3x + 2y = 7 \end{cases} \rightarrow \begin{array}{l} 3x + 2y = 7 \\ 3x + 2y = 7 \\ \hline 0 = 0 \end{array} \end{array}$$

Example 2:

$$\begin{array}{l} 1) \quad \begin{cases} 4x + 5y = 6 \\ 4x + 2y = 8 \end{cases} \rightarrow \begin{array}{l} 4x + 5y = 6 \\ -4x - 2y = 8 \\ \hline 7y = -2 \\ y = -\frac{2}{7} \end{array} \end{array}$$

$$\begin{array}{l} 2) \quad \begin{cases} 3x + 2y = 2 \\ 3x + y = 7 \end{cases} \rightarrow \begin{array}{l} 3x + 2y = 2 \\ -3x - y = -7 \\ \hline y = -5 \end{array} \end{array}$$

$$\begin{array}{l} 3) \quad \begin{cases} x - 2y = 2 \\ 3x = 2y + 10 \end{cases} \rightarrow \begin{array}{l} x - 2y = 2 \\ -x + 2y = -2 \\ \hline 0 = 0 \end{array} \end{array}$$

$$\begin{array}{l} 4) \quad \begin{cases} 2x + y = 25 \\ 2x = 5y + 7 \end{cases} \rightarrow \begin{array}{l} 2x + y = 25 \\ -2x - 5y = -7 \\ \hline y = 32 \end{array} \end{array}$$

$$\begin{array}{l} 1) \quad \begin{cases} 2x + 5y = 15 \\ -4x + 7y = -13 \end{cases} \rightarrow \begin{array}{l} 2x + 5y = 15 \\ 4x + 10y = 30 \\ -4x + 7y = -13 \\ \hline 17y = 17 \\ y = 1 \end{array} \end{array}$$

$$\begin{array}{l} 2) \quad \begin{cases} 6r + 7t = -15 \\ -3r + t = -6 \end{cases} \rightarrow \begin{array}{l} 6r + 7t = -15 \\ 6r + 7t = -15 \\ -6r - 2t = -12 \\ \hline 9t = -3 \\ t = -\frac{1}{3} \end{array} \end{array}$$

$$\begin{array}{l} 3) \quad \begin{cases} 2x - 7y = 3 \\ 5x - 4y = -6 \end{cases} \rightarrow \begin{array}{l} 2x - 7y = 3 \\ -10x + 35y = 15 \\ -2x + 7y = -3 \\ \hline -27y = 12 \\ y = -\frac{4}{9} \end{array} \end{array}$$

$$\begin{array}{l} 4) \quad \begin{cases} 2y - 4x = 18 \\ -5x + 3y = 23 \end{cases} \rightarrow \begin{array}{l} 2y - 4x = 18 \\ -5x + 3y = 23 \\ -4x + 2y = 18 \\ \hline -5x + 3y = 23 \\ -4x + 2y = 18 \\ \hline -x + y = 5 \end{array} \end{array}$$

HW

3.2 Solving Systems of Equations by the Elimination Method

1-8 only

5) $\begin{cases} 2x + 5y = 12 \\ 2x + 5y = 15 \end{cases}$

6) $\begin{cases} 8x + 4y = -16 \\ 2x + y = -4 \end{cases}$

Practice:

1) $\begin{cases} 5x + 3y = 2 \\ 2x + 20 = 4y \end{cases}$

2) $\begin{cases} 2x = 5 + 4y \\ 2y = 8 + x \end{cases}$

3) $\begin{cases} 4y + 30 = 10x \\ 5x - 2y = 15 \end{cases}$

HW

3.2 Solving Systems of Equations by the Elimination Method